

CONFIDENTIAL*Incerchany, Emil.***SIGNAL FLARES**

1. The basic idea of a segmented flare, such as you have submitted, is excellent. These flares have now undergone a study similar to the study under which the U. S. commercially available flares were subjected. The subject of this dispatch will be the basic findings of this study.

2. The evaluation of this flare is listed below:

- a. Ease of Ignition - Very good.
- b. Burning Time - 27 minutes.
- c. Ability to Burn after Five Days at -20°F - No detrimental effect to flare.

Cold Test (-20°F for 5 days)

- 1. Ease of ignition - good
- 2. Excessive smoke
- 3. Flame often obscured by chimneying
- 4. 1st transfer at 9-1/2 min.
- 5. 2nd transfer at 18-1/2 min.
- 6. Completed in 27-1/2 min.

Test conditions Wind 12-14 MPH, Temp. 54°F

- d. Ability to Burn after Five Days at +110°F - Burning time reduced.

25X1

Hot Test (+110°F for 5 days)

- 1. Ease of ignition - good
- 2. Excessive smoke.
- 3. Flame often obscured by chimneying.
- 4. 1st transfer at 8 min.
- 5. 2nd transfer at 16-1/2 min.
- 6. Completed in 24-1/2 min.

Test conditions Wind 12-14 MPH, Temp. 54°F

25X1

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- e. Ability to Withstand Simulated Rain - No apparent detrimental effect to flares. For comparison, a U. S. manufactured Bristol flare was burned along side of the Japanese flare. The comparative results are listed:

Water Test

Both Japanese & Bristol started and water turned on after first 30 sec.

8 min.: Both burning steadily
Bristol seems much slower

9-1/2 min.: Jap. - 2nd section ignited smoothly. Water increased.

18 min.: Jap. - 3rd section ignited fairly smoothly.

(Noticeable increase in reaction and flaring as each new section ignites--then reaction settles down).

22 min.: Bristol lost section of chimney
Flare almost went out--no red flame for at least 1 min., then started again.

27 min.: Bristol lost another section of chimney.
Same effect.

28 min.: Jap. flare jumped off wood plug.

29 min.: Jap. flare out.

36 min.: Bristol flare out.

- f. Visibility After Dark from Ground Level

Night Test Generally Still Weather Conditions

Japanese Weak orange flame, chimneyed excessively with a flickering flame and a large amount of smoke. Burning time 27 minutes.
For comparison, a Bristol flare was burned, strong carmine flame, very steady burning, chimney fell off at intervals. Burning time 36 minutes.

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3. Physical data compared with a Bristol flare is as follows:

	<u>Japanese</u>	<u>Bristol Red (30 min)</u>
Length of flare	21-1/4"	18-3/8"
Length of spike	2"	1-1/4"
Diameter of flare	1-3/8"	5/8"
Weight (total)	557 grams	338 grams
Average burning time	27 min.	32.25 min.
Chimneying	4"	2"

4. Conclusions of the above results are listed:

- a. It is felt that because of the excessive chimneying and accompanying large amount of smoke, the Japanese flare is not the best that is presently available. We feel that the above effects could be greatly reduced with proper adjustment of the formula.

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